Next 1 Page(s) In Document Denied

The New York Times

Reagan Plan on Verifying Nuclear Tests Faulted

Intelligence officials propose far broader approach.

By MICHAEL R. GORDON

Special to The New York Times

WASHINGTON, Jan. 12 — Government intelligence officials say a far more comprehensive approach should be taken to verifying Soviet and American compliance with limits on nuclear testing than has been proposed by the Reagan Administration, according to newly obtained secret documents.

The intelligence officials say the Reagan Administration's proposal is technically flawed.

The Administration proposal to the Soviet Union for verifying compliance with two unratified 1970's treaties, which limit the size of underground explosions, is "deficient" and fails to "meet the tests of comprehensiveness and technical soundness," according to a classified memorandum dated Dec. 4. The memorandum was prepared by a Central Intelligence Agency official, who was speaking on behalf of the Government's entire intelligence apparatus.

Another C.I.A. official noted in a classified memorandum dated Dec. 13 that the Administration proposal contained "inconsistencies, contradictions and incomplete work" that would not escape close scrutiny by Congress. "Frankly, if the Soviets had said 'yes' to our initial proposals, we would be in trouble," he wrote.

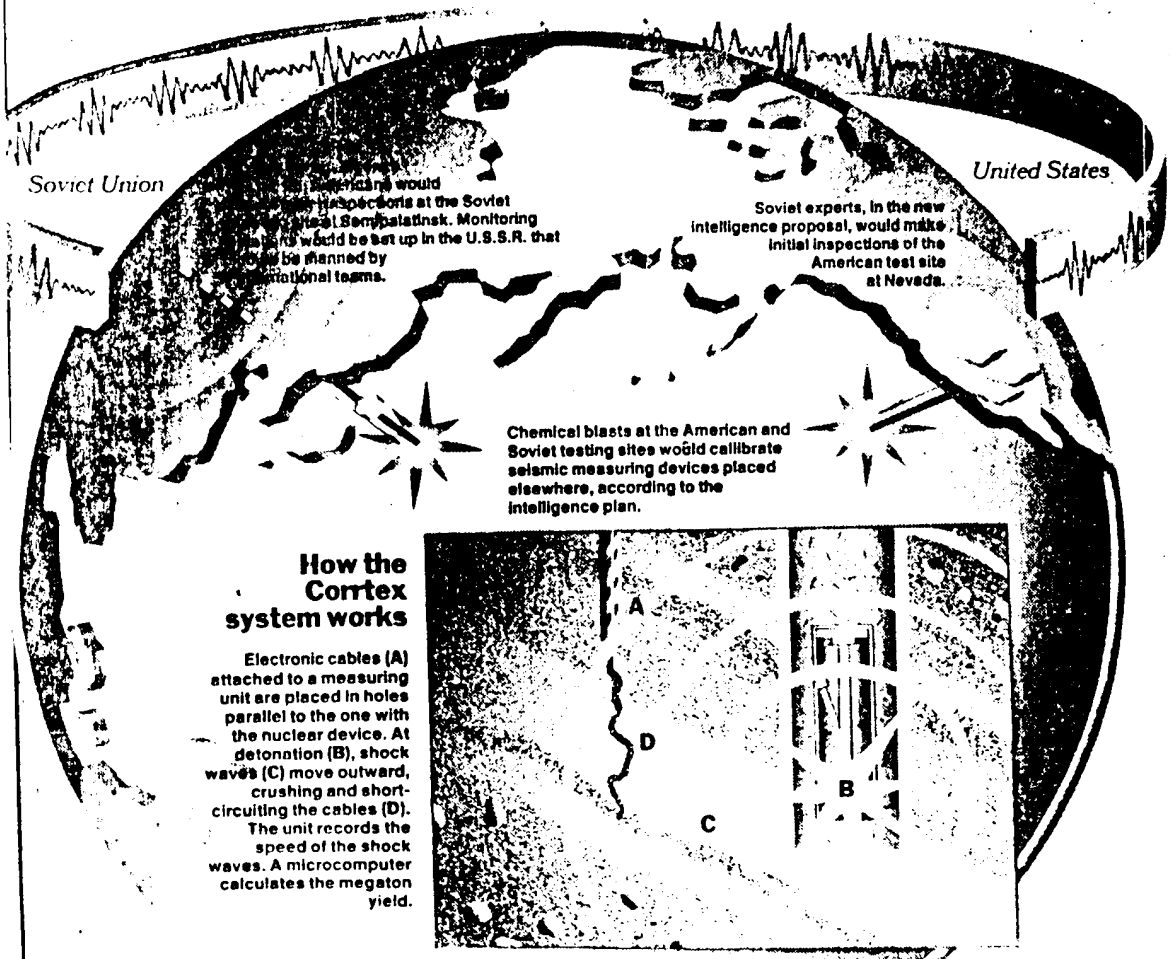
The intelligence experts propose what the Dec. 4 memorandum calls a "rich package" of methods to expand the Administration's plan of on-site measures of the size of Soviet tests. The intelligence experts' package includes these key elements:

¶Initial inspection of Soviet testing sites to confirm Soviet information on the geophysical characteristics of the sites.

¶The detonation of American chemical devices at Soviet testing sites to check the accuracy of seismic detection systems.

¶The establishment of monitoring stations on Soviet territory. Such stations, which could be staffed by international teams, had been proposed by Argentina, Mexico, Tanzania, India,

Continued on Page C10



Testing the nuclear test treaties

Officials within the Reagan Administration and the intelligence community disagree on ways to verify Soviet compliance with two treaties on limiting nuclear tests. The Administration proposes essentially relying on a technique called Cortex, which measures the size of nuclear explosions more accurately than traditional seismic techniques. Members of the intelligence community, however, propose far broader measures, including stationing international monitoring teams in each country

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Continued From Page C1

Sweden and Greece for the monitoring of a total test ban, the classified Dec. 4 memorandum notes.

¶The requirement of additional sharing of information between the countries when ambiguities in data arise.

The criticism by the intelligence experts has sparked a wide-ranging philosophical and technical debate within the Government. The debate raises the question of about how effectively the Administration has transformed its strong public commitment to verification into Government policy.

And the debate has important significance for future American negotiations with the Soviet Union on the testing issue. On the one hand, if the United States insists on monitoring procedures for the 1970's treaties that are too far-reaching, the Soviet may balk. This, in turn, could dim the prospects for future agreements on testing.

On the other hand, if an agreement can be reached on a broad range of new measures such as those proposed by the intelligence experts, it could provide a technical basis for negotiating lower limits on the size of nuclear explosions in the future.

The treaties in question are the Threshold Test Ban Treaty of 1974, which limits underground explosions to 150 kilotons, and the Peaceful Nuclear Explosions Treaty of 1976, which extends this limit to detonations used for engineering purposes.

On the eve of the Iceland summit meeting last year, President Reagan sent a letter to Congress saying he would make Senate approval of the treaties "a first order of business" this year with the caveat that the treaties would not take effect until new measures are employed to make them "effectively verifiable."

Mr. Reagan also said that as soon as the United States and the Soviet Union agreed on such measures, the two countries would begin a new set of talks to set additional limits on nuclear tests.

Administration officials are scheduled to testify on the 1970's treaties before the Senate Foreign Relations Committee Tuesday.

The technical debate centers on the relative merit of two techniques for monitoring nuclear explosions: Corrtex and seismic monitoring.

Corrtex, which stands for Continuous Reflectometry for Radius versus Time Experiments, is at the heart of the proposals presented in Geneva last year to the Soviet Union by the Reagan Administration.

Corrtex takes direct measurements of nuclear detonations through a cable inserted into the ground close to the blast. Electrical pulses are transmitted to the end of the cable and back. When the nuclear device explodes, the shock wave crushes and shortens the cable, and scientists determine from the electrical pulses how quickly the cable is shortened. This is used to determine how fast the shock wave moves through the ground and, by inference, how large the blast is.

The technique requires that American officials go to the Soviet test site to install and monitor the equipment.

The other approach, the use of seismic monitoring, is stressed in the more comprehensive approach outlined by the intelligence experts. It involves assessing the size of a nuclear blast by measuring different types of seismic waves that travel through the earth.

Experts say there are three basic types of such waves: body waves, which travel deep through the earth's interior; surface waves, which travel far distances in the earth's upper layers, and Lg waves, which travel in the upper 50 kilometers of the earth but do not travel for great distances. Independent measurements of these waves and other geological data can be used to improve the accuracy of seismic reading.

It is generally acknowledged that the United States' current ability, primarily seismic, for monitoring the treaties involves uncertainties.

One uncertainty stems from the differing geology of the test sites in the United States and in the Soviet Union. Experts say the Soviet test area at Semipalatinsk has been geologically stable for hundreds of millions of years, while there has been volcanic activity at the American test site in Nevada within the last few million years. Because of these differences, a Soviet test explosion produces a larger discernible wave traveling through the earth's interior than an American blast of the same magnitude. Seismologists have tried to compensate for this bias by introducing a corrective factor into their calculations.

Another monitoring uncertainty is that seismic measures are not exact. The Administration asserts that seismic measures are accurate to a factor of about two — that is, according to the Administration, an explosion of 100 kilotons could be measured as twice as large, 200 kilotons, or as half as large, 50 kilotons, though statistically most of the measurements would be concentrated in the middle. Some seismologists believe the uncertainty is not as great as the Administration says and can be reduced through new seismic techniques. Corrtex measurements of tests that are more than 50 kilotons have an uncertainty factor of about 1.3, the Administration says.

One key question is whether these uncertainties are manageable or whether new measurement techniques are needed.

Some experts believe that the treaties can be adequately verified without new techniques. Representative Dave McCurdy, Democrat of Oklahoma, a senior member of the House Permanent Select Committee on Intelligence, maintains that, given the United States' current monitoring abilities, the Soviet Union could not exceed the treaty limits in a way that would give it a military advantage, according to a McCurdy aide.

And Spurgeon M. Keeny Jr., a former deputy director of the Arms Control and Disarmanent Agency, said the Administration's demand for additional verification for the treaties could set a "bad precedent" of asking for instrusive verification that is not really needed.

Supporters of this view also say verification of the treaties could be improved if the United States would simply ratify them and allow them to go into effect. The treaties provide for an exchange of information on geology and the size of a test explosion, but the Reagan Administration says it would have no way to confirm such information and has refused to ratify the agreements.

Some Administration experts say a limited use of Corrtex would suffice to improve verification. The Corrtex technique would be used, according to this view, to check the accuracy of seismic readings and "calibrate" American seismic monitoring systems outside of the Soviet Union.

But the Administration has proposed a more far-reaching use of Corrtex. It has asked that it be used on each Soviet blast of 75 kilotons or more so as to compensate for the uncertainty of seismic readings and to insure that the blast is not over the 150-kiloton limit. If the Soviet Union does not conduct a test this large over a six-month period, the Administration would monitor the largest test conducted. A kiloton is equivalent to the explosive force of a thousand tons of TNT.

Officials from the Arms Control and Disarmament Agency have been drafting a new protocol to the treaties based on this Administration approach.

But the view now being presented by Government intelligence experts represents a new variable in the verification debate.

According to classified Government documents, the intelligence experts argue for a far more comprehensive approach that would include several "mutually reinforcing elements." The experts have argued that additional measures are needed to insure that when the monitoring is in force the Soviet Union is, in fact, notifying the United States of all tests that are 75 kilotons or greater.

In addition, they say that the Soviet has shown a receptivity to some of the new measures in the context of a ban on all nuclear tests and that the United States should try to take advantage of this in the context of limiting test size.

Some seismologists have previously argued that some of the measures suggested by the intelligence experts to improve the monitoring of the treaties would be particularly useful for monitoring any new agreements with much lower limits on the size of underground detonations.

Paul G. Richards of Columbia University's Lamont-Doherty Geological Observatory told the House Permanent Select Committee on Intelligence last year that in-country monitoring stations could be used to detect Lg waves, the regional seismic waves that do not travel long distances.

By analyzing these waves, along with other types of seismic waves monitored from outside the Soviet Union, experts can substantially reduce the uncertainty surrounding seismic reading. Mr. Richards suggests that a factor of 1.5 uncertainty can eventually be achieved, close to the 1.3 factor currently claimed for Corrtex.

Charles B. Archambeau of the University of Colorado has also suggested that the explosion of chemical devices near Soviet test sites, as the intelligence experts propose, would be a useful way to learn about the geology of areas. This, he says, would help improve the accuracy of seismic measurements. Mr. Archambeau has worked with the Natural Resources Defense Council, a private group that is working with the Soviet Academy of Sciences on private seismic monitoring stations in the Soviet Union and the United States.

Some experts say the Government intelligence experts are right to seek a broader approach that does not focus exclusively on Corrtex.

For one thing, they assert, the Soviet would not be likely to accept the extensive use of Corrtex as proposed by the Administration because it would require an almost constant American presence at the test site.

In addition, they say Corrtex is not a useful technique for measuring explosions of less than 50 kilotons and that the Administration's exclusive reliance on it may reflect an underlying hostility to negotiating substantially lower limits on the size of tests. They say the new seismic monitoring measures could monitor small tests.

But some Government officials are sharply critical of the comprehensive approach. These opponents say, for instance, that the intelligence experts may be interested in gathering intelligence information that is not necessary to monitor treaty compliance.

Another objection is that some of the proposals by the intelligence experts, such as in-country monitoring stations, are more appropriate for monitoring a low limit on explosion size or a moratorium on tests than for the monitoring the 1976's treaties. The critics also maintain that the use of chemical detonations would introduce new complications, such as the need to determine how much they replicate the effects of a nuclear blast.

Another philosophical difference pertains to how important it is to determine conclusively whether the Soviet Union is properly notifying the United States of all tests of 75 kilotons or moreCritics of the comprehensive approach say the main goal of verification is to confirm that Soviet tests do not exceed 150 kilotons and that intelligence experts are losing sight of that objective in suggesting that the United States needs to be absolutely sure that it has been informed of all Soviet tests that are 75 kilotons or more.

Government officials said the current verification debate within the Administration will probably not be resolved anytime soon. The current plan, they say, is to present the treaty protocol and the intelligence community's reservations to the National Security Council and let the White House decide the question.

Nuclear Treaty Approval to Be Sought

Reagan Sets Condition That Soviets Accept On-Site Inspection

By R. Jeffrey Smith
Washington Post Staff Writer

President Reagan prepared to request congressional approval of two unratified treaties restricting the explosive force of nuclear tests yesterday, but only if the Soviet Union accepts on-site inspection of its tests, administration and congressional sources said.

The formal request is expected at the opening of two days of Senate Foreign Relations Committee hearings on the treaties. They are intended to air bitter disputes among testing experts and government officials over past Soviet treaty compliance and a controversial new U.S. method of verifying compliance.

Reagan's request would fulfill a bargain struck with Capitol Hill last October to make the treaties "a first order of business for the Congress" in exchange for a decision by House-Senate defense conferees to kill an amendment barring all but a few nuclear tests, according to administration officials.

Reagan opposes such a test ban on grounds that it would interfere with needed modernization of the U.S. nuclear arsenal and development of nuclear weapons in space for ballistic missile defense, under the Strategic Defense Initiative.

Congressional sources said the White House request for "advice and consent" on the two treaties, which prohibit individual nuclear tests with a yield or explosive force of more than 150 kilotons, will probably culminate in a favorable vote by two-thirds of the Senate next month.

A yield of 150 kilotons is equivalent to 150,000 tons of TNT or about 10 times the force of the bomb dropped on Hiroshima in August 1945.

Both sides claim to have respected the treaties, known as the Threshold Test Ban Treaty of 1974 and the Peaceful Nuclear Explosions Treaty of 1976, even though Senate ratification efforts were suspended at the behest of President Jimmy Carter in 1978.

But some U.S. officials have said they believe that the Soviets have cheated by exploding a few bombs over 150 kilotons.

This claim is disputed by seismologists and other experts inside and outside the government who have said that the Soviets have complied with the treaty or that the evidence is inconclusive.

Even before the hearings, Foreign Relations committee staff members, acting at the direction of Chairman Claiborne Pell (D-R.I.), tentatively agreed to attach a limiting provision to the approval resolution. It would block the treaties from becoming effective until the president certifies that the Soviets have agreed to new verification procedures that include "direct, accurate yield measurements" of Soviet tests.

Various officials said disagreement between the committee and White House continues over the need for additional Senate approval of the verification provisions. The committee has insisted that no additional vote is needed, while the administration has insisted otherwise.

Senate and administration sources said the dispute reflects in part a belief that Reagan's successor, not Reagan, will finally reach agreement with the Soviets on the new verification provisions.

As a result, committee Democrats seek to avoid having the successor's hands tied by the need to obtain the additional Senate approval. Conversely, administration conservatives want those of like mind in Congress to retain a final veto over the verification provisions.

Once all the provisions have been approved by Congress, acceptance by the president constitutes formal ratification, which gives the treaties full legal status.

Today, officials of the Defense and State departments and the Arms Control and Disarmament Agency are expected to testify that the provisions are needed because certain Soviet tests constituted "likely" violations of the Threshold Test Ban Treaty. U.S. intelligence experts estimate that a few Soviet tests may have had yields exceeding 150 kilotons.

This assessment was opposed by representatives of the Department of Energy and the Central Intelligence Agency, citing insufficient evidence. But Defense Department representatives sought an even stiffer claim of Soviet noncompliance, and a compromise resulted, according to senior U.S. officials.

On Thursday, Roger Batzel, director of the Lawrence Livermore National Laboratory, is expected to report instead that the Soviets appear to be respecting the treaty, according to a well-informed source, as will Livermore's chief verification expert, Milo Nordyke, and Columbia University seismologist Paul Richards.

Additional controversy may arise at the hearings over the administration's plan for improving treaty verification. It involves using an underground coaxial cable and electronic timer at the Soviet test site for every test with a projected yield of more than 75 kilotons.

By measuring the speed with which the cable is crushed by an explosive shock wave, U.S. experts have said they hope to narrow the range of uncertainty for their yield estimates from about 60 or 70 percent to 30 percent.

Some U.S. technical experts maintain that the reliability of the new, on-site measurement technique is unproven, however, because it has been tested only twice in circumstances identical to those in which it would be used.

In addition, some experts maintain that reliability can be greatly improved by direct monitoring of only a few tests, rather than every test expected to exceed 75 kilotons. The Soviets, moreover, have told U.S. officials that they do not accept the proposed U.S. measurement technique.